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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,626	09/08/2003	Sanjiv M. Shah	42P15788	3443

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BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

EXAMINER

WILSER, MICHAEL P

ART UNIT	PAPER NUMBER
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2109

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/658,626	Applicant(s) SHAH ET AL.	
	Examiner Michael Wilser	Art Unit 2109	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>8/22/05, 11/17/05, & 4/27/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is in response to the original filing of September 8, 2003. Claims 1-55 are pending and have been considered below.

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 16-28 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 16-28 are directed towards an apparatus. Claims 16-22 claim a lock and a lock acquirer and Claims 23-28 claim a lock and a lock releaser. The specification sets forth no hardware for these features. Therefore, Claims 16-28 appear to be software per se.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 1-55 are rejected under 35 U.S.C. 102(e) as being anticipated by Auslander et al. (US 2003/0200457).

Claims 1 and 29: Auslander discloses a method and computer readable medium for managing a lock utilizing threads (page 2, paragraph 17) comprising:

- a. selecting an action to perform upon the lock (page 2, paragraph 20);
- b. acquiring the lock (page 2 & 3, paragraph 22);
- c. trying to acquire the lock (page 2 & 3, paragraph 22);
- d. releasing the lock (page 2, paragraph 20);
- e. querying the current state of the multi-state lock (page 3, paragraph 22);
- f. determining the next state of the lock (page 3, paragraph 22); and
- g. transitioning the lock from the current state to the next determined state (page 3, paragraph 22).

Claims 16 and 23: Auslander discloses an apparatus comprising:

- a. a multi-state lock having a flag value, first value, and second value (page 2, paragraph 18);
- b. a lock acquirer capable of acquiring the lock (page 2, paragraph 20);
- c. a lock releaser capable of releasing the lock (page 2, paragraph 20);
- d. querying the current state of the lock (page 3, paragraph 22);
- e. determining the next state of the lock (page 3, paragraph 22); and

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f. transitioning the lock from current state to the next determined state (page 3, paragraph 22).

Claims 44 and 51: Auslander discloses a system comprising:

- a. a memory element capable of storing a queue of threads (page 3, paragraph 24);
- b. a unique thread identifier (page 2, paragraph 18);
- c. a next thread value to facilitate access to the next thread in the queue (page 2, paragraph 18 & 21);
- d. a multi-state lock having a flag value, first value, and second value (page 2, paragraph 18);
- e. a lock acquirer capable of acquiring the lock (page 2, paragraph 20);
- f. a lock releaser capable of releasing the lock (page 2, paragraph 20);
- g. querying the current state of the lock (page 3, paragraph 22);
- h. determining the next state of the lock (page 3, paragraph 22); and
- i. transitioning the lock from the current state to the next determined state (page 3, paragraph 22).

Claims 2, 24, 30, and 52: Auslander discloses a method, apparatus, medium, and system as in Claims 1, 23, 29, and 51 above, and further discloses that if the transition fails to acquire or release the lock to repeat the following steps until transition succeeds (page 3, paragraph 22):

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- a. querying the current state of the lock (page 3, paragraph 22);
- b. determining the next state of the lock (page 3, paragraph 22); and
- c. transitioning lock from current state to next determined state (page 3, paragraph 22).

Claims 3, 9, 20, 31, 37, and 48: Auslander discloses a method, apparatus, medium, and system as in Claims 2, 1, 16, 30, 29 and 44 above, and further discloses that if:

- a. state transition succeeds (page 3, paragraph 22);
- b. selected action is acquiring the lock (page 2, paragraph 21); and
- c. determined next state represents acquisition of the lock (page 3, paragraph 22); then
- d. indicate acquisition of the lock (page 2 & 3, paragraph 22).

Claims 4, 10, 32, and 38: Auslander discloses a method and medium as in Claims 3, 9, 31, and 37 above, and further discloses that if:

- a. state transition succeeds (page 3, paragraph 22);
- b. selected action is acquiring the lock (page 2, paragraph 21); and
- c. determined next state does not represent acquisition of the lock (page 3, paragraph 22); then
- d. add the thread to the end of a queue of threads waiting to acquire the lock (page 2, paragraph 21);

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e. wait to receive notification that thread may acquire the lock (page 2, paragraph 21); and

f. indicate the acquisition of the lock (page 2 & 3, paragraph 22).

Claims 5, 11, 33, and 39: Auslander discloses a method and medium as in Claims 2, 1, 30, and 29 above, and further discloses that if:

a. state transition succeeds (page 3, paragraph 22); and

b. selected action is releasing the lock (page 3, paragraph 22); then

c. determine the number of threads in queue waiting to acquire lock utilizing the determined next state of the lock (page 2, paragraph 21).

Claims 25 and 53: Auslander discloses an apparatus and system as in Claims 23 and 51 above, and further discloses that if the state transition succeeds (page 3, paragraph 22), the lock releaser is further capable of determining the number of threads in a queue waiting to acquire the lock utilizing the determined next state of the lock (page 2, paragraph 21).

Claims 6, 12, 26, 34, 40, and 54: Auslander discloses a method, apparatus, medium, and system as in Claims 5, 11, 25, 33, 39, and 53 above, and further discloses that if the queue includes at least a first thread (page 3, paragraph 22):

a. remove the first thread from the queue (page 3, paragraph 22); and

b. notify the first thread that it has acquired the lock (page 3, paragraph 22).

Claims 7 and 35: Auslander discloses a method and medium as in Claims 1 and 29 above, and further discloses that if:

- a. selected action is trying to acquire the lock (page 2, paragraph 21); and
- b. state transition fails (page 3, paragraph 22); then
- c. indicate the lock was unable to be acquired (page 3, paragraph 22).

Claims 8 and 36: Auslander discloses a method and medium as in Claims 1 and 29 above, and further discloses that if:

- a. state transition succeeds (page 3, paragraph 22); and
- b. selected action is trying to acquire the lock (page 2, paragraph 21); then
- c. indicate the acquisition of the lock (page 2 & 3, paragraph 22).

Claims 13 and 41: Auslander discloses a method and medium as in Claims 1 and 19 above, and further discloses that the thread includes:

- a. a unique thread identifier (page 2, paragraph 18);
- b. next thread field to facilitate access to the next thread in a queue of thread waiting to acquire the lock (page 2, paragraph 18 & 21); and
- c. thread is capable of waiting for single lock at a time (page 2, paragraph 20).

Claims 21 and 49: Auslander discloses an apparatus and system as in Claims 20 and 48 above, and further discloses that if:

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- a. state transition fails (page 3, paragraph 22);
- b. general action is acquire the lock (page 2, paragraph 21); and
- c. determined next state does not represent acquisition of the lock (page 3, paragraph 22); then the lock acquirer is further capable of
 - d. adding the thread to the end of a queue of threads waiting to acquire the lock (page 2, paragraph 21);
 - e. waiting to receive notification that the thread may acquire the lock (page 2, paragraph 21); and
 - f. indicating the acquisition of the lock (page 2 & 3, paragraph 22).

Claims 14, 22, 42, and 50: Auslander discloses of a method, apparatus, medium, and system as in Claims 1, 21, 29, and 49 above, and further discloses that the action of acquiring the lock includes the inability to timeout or fail to acquire the lock (page 2, paragraph 20).

Claims 15, 28, 43, and 55: Auslander discloses a method, apparatus, medium, and system as in Claims 1, 23, 29, and 51 above, and further discloses that when the locks state may change:

- a. querying the current state of the lock (page 3, paragraph 22); and
- b. transitioning the lock from the current state to the next determined state of the lock (page 3, paragraph 22).

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Claims 17 and 45: Auslander discloses an apparatus and system as in Claims 16 and 44 above, and further discloses that the lock acquirer is capable of performing two general actions of acquiring the lock (page 2 & 3, paragraph 22) and trying to acquire the lock (page 2 & 3, paragraph 22) wherein:

- a. state transition fails (page 3, paragraph 22); and
- b. general action is acquiring the lock (page 2 & 3, paragraph 22) then the lock acquirer is capable of repeating (page 3, paragraph 22) the steps of:
 - c. querying the current state of the lock (page 3, paragraph 22);
 - d. determining the next state of the lock (page 3, paragraph 22); and
 - e. attempting to transition the lock from current state to the next determined state of the lock (page 3, paragraph 22).

Claims 18 and 46: Auslander discloses an apparatus and system as in Claims 17 and 45 above, and further discloses of indicating that the lock was unable to be acquired (page 3, paragraph 22).

Claims 19 and 47: Auslander discloses an apparatus and system as in Claims 18 and 46 above, and further discloses of indicating that the lock was acquired (page 2 & 3, paragraph 22).

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Claim 27: Auslander discloses of an apparatus as in Claim 26 above, and further discloses that the lock releaser (page 2, paragraph 20) is capable of removing the first thread from the queue utilizing a thread having:

- a. a unique thread identifier (page 2, paragraph 18); and
- b. a next thread value to facilitate access to the next thread in the queue (page 2, paragraph 18 & 21).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Martin et al. (US 7,017,160) "Concurrent Shared Object Implemented Using a Linked-List with Amortized Node Allocation."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Wilser whose telephone number is (571) 270-1689. The examiner can normally be reached on Mon-Fri 7:30-5:00 EST (Alt Fridays Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Myhre can be reached on (571) 270-1065. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



MPW

March 27, 2007



James Myhre
Supervisory Patent Examiner